



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

*Bruce R. Smith et al.*

U.S. Serial No. 09/453,498

Filed December 3, 1999

Docket No. 2165 (GP-03-8) (old 013550-069)

For: FOOD SERVING PAPERBOARD  
CONTAINER PRESSING APPARATUS  
EMPLOYING CAST-IN ELECTRICAL  
HEATERS

Examiner: E. Kim

Group Art Unit: 3721

RECEIVED  
APR 15 2004  
TECHNOLOGY CENTER 3700

Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

DECLARATION OF MARK B. LITTLEJOHN  
UNDER 37 CFR §1.132

Sir:

Mark B. Littlejohn, a co-inventor of the subject matter of the above-noted patent application (sometimes referred to below as the Present Invention), makes the following statements in support of patentability.

1. That he was awarded a Bachelor of Science Degree in Mechanical Engineering from the University of Wisconsin, Madison, and has worked at the Dixie® products division, now of Georgia-Pacific Corporation, for many years in connection with the operation, design and improvement of pressware die sets for making paperboard containers such as plates, bowls and the like. A listing of issued patents of which he is an inventor of the subject matter is attached as Exhibit 1.

2. That he understands from Counsel that most claims in the above-noted patent application have been rejected as obvious over United States Patent No. 4,721,500 to *Van Handel et al.* in view of United States Patent No. 6,029,730 to *Gospe et al.* He is familiar with the '500 *Van Handel et al.* patent and has reviewed the '730 patent of *Gospe et al.*
3. That *Van Handel et al.* '500 discloses electrical resistance heaters for pressware die sets (col. 7 - col. 8, bridging text) and *Gospe et al.* '730, which relates to an oven for separating components of packaged semi-conductor chips contains the following text at col. 4, lines 48-53:

It will be appreciated by persons of ordinary skill in the relevant arts that the foil heater 62 could be replaced with various heating elements such as an array of thermoelectric devices, a cable heater, a cartridge heater, a cast-in heater, or the like. Each replacement would provide functionally similar heating properties and capabilities as the foil heater 62.

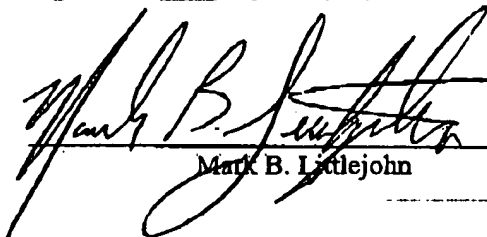
4. That, in his opinion, the *Van Handel et al.* '500 and *Gospe et al.* '730 patents do not suggest the Present Invention which resides, in part, in the remarkable durability of cast-in heaters in pressware die sets. In this connection, it is noted that pressware die sets are typically operated at 40-60 pressings per minute for 9" or 10" paper plates (*Van Handel et al.* '500, col. 11, lines 33-38) while *Gospe et al.* '730 relates to an essentially stationary oven. Operating issues such as durability, distortion, or warping of components, heat transfer and so forth are accordingly minimal as regards the '730 *Gospe et al.* Patent, but are extremely important with respect to pressware die sets.
5. One of skill in the art would not make the selection proposed by the Examiner without knowledge of the Present Invention because cast-in heaters are much more expensive than conventional heaters, costing up to ten (10) times as much. See application as filed, p. 37 which is consistent with his knowledge of relative costs of conventionally-used heaters versus cast-in heaters in a pressware die set.

6. That he understands from Counsel that a *Declaration of Dana Markwell* previously submitted in this application states on page 4 that 7 failures were experienced with 100 cast-in heaters in pressware die sets over a one-year period (a 7% failure rate per year) versus 345 failures over a one-year period with 60 conventional ring heaters (a 575% per annum failure rate) experienced with conventional heaters, which thus had an average useful life of about two (2) months.
7. That his personal experience with cast-in heaters is consistent with that reported by Dana Markwell. He is aware of instances where cast-in heaters have lasted over four (4) years of operation in a pressware die set, whereas conventional ring heaters are typically replaced in less than a year. That the longevity of the cast-in heaters in a pressware die set has provided incentive to further invest in the technology since the *Markwell Declaration* was submitted in this application in 2002.
8. That despite their cost of over three hundred dollars (\$300.00) apiece, Georgia-Pacific Corporation, Dixie Division, has already installed over seven hundred (700+) cast-in heaters and is planning on installing five hundred (500) more in 2004. In addition, all new paperboard pressware forming tools being commissioned by Georgia-Pacific include cast-in heaters in the die set.
9. That the commercial success of the Present Invention is due in large measure to the remarkable and unexpected reliability for the cast-in heaters noted above. A typical commercial press may have five or six die sets each having at least two heaters in a single die set. A failure of one heater in one die set is enough to cause shutdown of the entire press.
10. That the durability of cast-in heaters in a pressware die set is believed due, in part, to their ability to heat forming surfaces to a desired temperature for forming with a lower heater temperature because of better heat transfer. In this regard, there is attached as Exhibits 2 and 3 plots of various temperatures in substantially identical die sets for making 7" paperboard plates using conventional ring heaters versus

cast-in die heaters, respectively, under typical production conditions (40-60 pressings per minute and more). In both cases, the temperature of the forming surfaces is maintained at about 320°F during production.

11. It is seen in the simulated temperature data of Exhibit 2 that conventional ring heaters must be operated between about 900°F to about 1100°F or so in order to maintain the desired forming surface temperature of 320°F with conventional ring heaters under production conditions.
12. It is seen in Exhibit 3 that the cast-in heaters can maintain the desired surface temperatures under the same production conditions as Exhibit 2 with heater temperatures between about 425°F and 625°F. The heater temperature difference in the two cases is quite remarkable given the same production rates and forming surface temperatures.
13. The undersigned Declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the subject application or any patent issuing thereon.

Signed this 7<sup>th</sup> day of April, 2004.

  
Mark B. Littlejohn